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Deep Understanding on *Wh* Questions for English L2ers

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Lee, Eun Kyeong. "Deep Understanding on *Wh* Questions for English L2ers." *Studies in English Language & Literature* 44.3 (2018): 275-294. This paper delves into L2 acquisition status about more sophisticated *wh*-questions patterns, compared to Lee(2017)'s argument that relative gap distance would be conclusive in distinguishing the (un)acceptability in a sentence. Meanwhile, this version is closely related with *that*-trace filter, CNPC and interpretative ambiguity on gapping. That is to say, considering that it remains unclear how to figure out more syntactically tough principle besides knowingly simple constraints, it is meaningful to catch their acquisition difference of between L1ers and L2ers. Here, three predictions are argued: first, L2ers will feel challenged to compare relative and complement clause, second, *That*-trace filter and CNPC are likely to be acquired to some degree, third, gap interpretation caused by the sentence-final PP will bring about syntactic confusion. Eventually, these hypotheses above are accepted by considerably understandable rate of L2ers selected. (Jeonju University)

Key Words: English L2ers, L2 acquisition, *that*-trace filter, CNPC, gap interpretation

I. Introduction

In most visible English sentences, it is widely recognized that *Wh*-words in a sentence-initial position are derived from the rests of sentences anywhere. This syntactic property has brought a lot of topics emerging within a simple sentence plus a complex sentence given that they are closely involved with many theoretical principles. In fact, aside from the ever processed syntactic viewpoints, the acquisition

studies for L2ers(second language learners) on English *wh*-questions have been under much consideration so far. Thus, it directly follows from the persuading formation of syntactically various patterns: mutual gap distance between fronted *wh* word and its gap, embedding depth associated with a (in)transitive verb or preposition's c-selection and semantic ambiguity derived from more than two possible derived verbs on matrix or embedded clause(Lee, 2017).[1]

At this time, this paper will shed light on more delicate patterns on *wh*-extraction constructions such as *that*-Trace Filter in the examples (1a-d), Complex NP Constraint(CNPC) in the example (2a-b) and gap interpretation of sentence-final PP in the example (3a-b): it is quite dubious that to what extent English L2ers realize these picky patterns and which features exist in their mastering process. From this perspective, it is likely to be worthy of tracking the comprehension status and production order of each pattern between L1ers and L2ers, starting from syntactic or its related functional aspect. In other words, this ongoing experiment argued in earnest here is to see that even adult L2ers have already acquired these advanced patterns or they are still on development stage.

(1) a. *Who did the lion know [that ____ swam in the pond]? subject gap with *that*
b. Who did the lion believe [____swam in the pond]? subject gap without *that*
c. Who did the dog notice [that the rooster kicked ____]? object gap with *that*
d. Who did the horse believe [the lion hugged ____]? object gap without *that*

(2) a. Who did John [$_{vp}$ believe [$_{s}$ that Sue met___]]?
(cf. John believed that Sue met Mary)
b. *Who did John believe [$_{NP}$ the man [$_{s}$ that met ____]]?
(cf. John believed the man that met Mary)

[1] Lee (2017) examined the acquisition pattern of English *Wh*-questions toward Korean L1ers with regard to SQ & OQ's distribution. Via the real experiment it is concluded that three hypotheses proved to be considerably reasonable. In detail, first, SQ's priority over OQ's is identified, next, the complexity rating on embedding is so decisive to judge the (un)acceptability and lastly, the gap percentage in an SQ and OQ's embedded clause is nearly asymmetrical by half and half. So, English L1ers and L2ers seemed to bear the almost same acquisition process with only a different target.

(3) a. favored interpretation(with a crayon is in the embedded S):
Jim is drawing [$_{NP}$ a monkey [$_{S}$ that is scratching its head with a crayon]].
b. disfavored interpretation(with a crayon is in the higher S):
Jim is drawing [$_{NP}$ a monkey [$_{S}$ that is scratching its head]] with a crayon.

This paper is organized as follows: Section II discusses the previous analysis of *wh*-question realization in child language and its processing interpretation. In section III, this paper examines the experimental procedures including its subject and three hypotheses toward Korean L1ers. Section IV is reserved for results and corresponsive discussion. Finally, section V summarizes the main conclusion.

II. Previous Linguistic Research

2.1 *that*-Trace Effect

One of the greatest puzzles in the syntax involves the contrast in (4). As this contrast shows, a subject gap is not permitted when the complementizer *that* is present: (4a) is ungrammatical although its counterpart without *that* is acceptable. Strangely, this contrast is found only with subject gaps. In (5), the presence of *that* has no effect on the admissibility of an object gap in an embedded clause.

(4) subject gap: a.*Who did Harry say [that ___mistrusted the stranger]?
b. Who did Harry say [___mistrusted the stranger]?

(5) object gap: a. Who did Harry say [that the stranger mistrusted ___]?
b. Who did Harry say [the stranger mistrusted ___]?

Even more puzzling is that subject gap in (4a) is not incompatible with complementizers in relative clauses in (6) below which is perfectly acceptable.

(6) subject gap in relative clause

I know the people [that____mistrusted the stranger].[2]

The classic contrasts in (4-6) involves the 'filter' paraphrased in (7), which blocks a string consisting of the complementizer *that* and a subject gap in a non-relative clause.(There have been numerous attempts to derive this filter from a general grammatical principles; see Rizzi 1990 for one proposal.)

(7) The *that*-trace filter(e.g., Chomsky and Lasnik 1977):

*that _____ (except in a relative clause)

On the *that*-trace filter's acquisition done by Phinney(1981) in Box 1, the stories preceding the test questions were designed by a way that each question was answered by the bracketed S as a complement clause or a relative clause. This can be presented by considering the story associated with sentence type (i), the structure with a complementizer *that* followed by a subject gap.[3]

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[2] By Kim (2013), 90 Korean adults showed the comprehension order, as SS > OO > OS > SO type and the number of possible gap candidates, not just the distance, made them difficult to comprehend. This says they follow one of the native speakers' comprehension and production order as de Villiers et all (1979)'s result. So, it is clear that high school students are in the developmental process and college students have already arrived at full competence for gap interpretation in a relative clause.

a. SS Type: The dog [that ___ chased the cat] bumps into the chicken. (subject head&subject gap)
b. SO Type: The chicken [that the dog chased ___] jumps over the cat. (subject head&object gap)
c. OS Type: The dog chased the chicken [that ___] jumps over the cat. (object head&subject gap)
d. OO Type: The dog chased the chicken [that the cat bit _____]. (object head&object gap)

[3] Barros et al. (2013) compares the acceptability (iaB) with the unacceptability of (ibB). They propose that it is derived from the following underlying structure in (ii, iii). Their idea is that the corrective 'fragment' in *because* clause moves to the edge of the clause, which is also extracted out of TP ellipsis, and then feeds into ellipsis in (ii). However, the derivation in (iii) is not available considering that they attribute its ill-formedness to a violation of the *that-trace* constraint.

Because island: (i) a. A: Did they leave because you offended [Mary]?
B: No, ?(?? I offended) Sarah.
b. A: Did Ben leave the party because [Abby] wouldn't dance?
B: No, Sally *(?? wouldn't dance with him).
(ii) $[_{CP}$ Sarah$_2$ [because you offended t_2]]$_1$ $[_{TP}$ They left t_1].
(iii) *[Sally$_2$ $[_{CP}$ because t_2 wouldn't dance]]$_1$ $[_{TP}$ Ben left the party t_1].

Box 1 & The study: Phinney 1981

Subjects: 85 children aged 3;0-6;5, divided into four groups on the basis of their performance on a pretest requiring imitation of sentences with finite and nonfinite complement clauses: G(group)
GI mean age=3;7 GII mean age=4;9 GIII mean age=5;0 GIV mean age=5;2

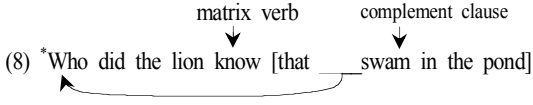
Sentence Types: (4 tokens of each type)

i. subject gap with *that*: *Who did the lion know [that ____ swam in the pond]?
ii. subject gap without *that*: Who did the lion believe [____swam in the pond]?
iii. object gap with *that*: Who did the dog notice [that the rooster kicked ____]?
iv. object gap without *that*: Who did the horse believe [the lion hugged ____]?

Task: Children responded to questions of the above types after listening to a short story.

> The lion and the rooster are friends. Yesterday, the lion saw a strange dog swimming in the pond. While the lion was away, the rooster went swimming. *Who did the lion know that swam in the pond?*

One interpretation treats the embedded clause as complement of the matrix verb *know*. As this clause holds the complementizer *that* and a subject gap, it violates the *that* trace filter. Children to assign this interpretation respond by saying 'the dog', as this is the animal that the lion actually saw swimming in the pond. Another interpretation treats the embedded S as a relative clause. This *wh* word *who* in turn is interpreted as the object of the matrix verb *know*. This is the only interpretation by an adult grammar, since there is no violation of *that*-trace filter. Children trying this interpretation respond by saying 'the rooster', since this is the only animal who is known to the lion and who swam in the pond.



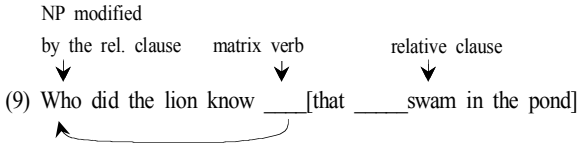


Table 1 results in Phinney's experiment for two children groups. The crucial scores for type (i) show the perception of the *that*-trace filter. In the other three patterns, the complement clause response is compatible with the filter because of either no *that*(type ii) or the gap in object position (types iii and iv). Even the youngest children seem to have acquired the *that*-trace filter, considering that they would avoid the prohibited response in type (i) with the rate of 5% or below.

Table 1. Results of the *that*–Trace Experiment(percentages)(based on Phinney 1981:193–96)

Sentence type	Complement Clause Response		Relative Clause Response	
	Group I	Group II	Group I	Group II
i	5	3	36	52
ii	63	84	17	5
iii	78	83	12	16
iv	70	89	17	0

Table 2 by Thornton(1990, Box 2(footnote)) partly confirms Phinney's study that the young follow the *that*-trace filter. Many questions were elicited, with all but one of the children producing questions with a gap in the embedded clause. The children used *that* with an embedded clause holding a subject gap 18% of the time (19 times out of 105) despite the *that*-trace filter. Though this error is unexpectedly high, he notes the offending pattern was made consistently by only two children(both age 3;9). Nonetheless, McDaniel, Chiu, and Maxfield(1995:723) say that on a grammaticality task for 32 children aged 2;11 to 5;7, the acceptance rate of *that*-trace patterns was 24%, compared to 2% for adults.[4]

[4] Box 2 & The Study: Thornton 1990

Table 2. Results of Thornton's *that*-Trace Experiment (based on Thornton 1990:88)

a. Violates the *that*-trace filter.[5]	with *that*	without *that*
embedded clause with subject gap	19[a](18%)	86(82%)
embedded clause with object gap	21(25%)	62(75%)

2.2 Complex NP Constraint(CNPC)

The contrast of the *wh* questions in the examples (10) and (11) has been of interest to syntacticians for almost three decades. In (10), the gap associated with the sentence-initial *wh* word is embedded within a complement clause within a VP. In (11), in contrast, the gap is embedded within a relative clause within a complex NP(Ross 1967), which proves to be ungrammatical. The constraint is applied for to compare (10) with (11) is like (12) below. (In recent work, this constraint is subsumed under a general principle, Subjacency Condition-see, e.g., N. Chomsky 1981.) For clear reasons, it is widely believed that the acquisition device is inclined to recognize the CNPC from the earliest development stage.

(10) Who did John [$_{vp}$ believe [$_{s}$ that Sue met___]]?
(cf. John believed that Sue met Mary.)

Subjects: 21 children aged 2;10-5;5 (mean age=4;3)
Sentence Types: i. Subject gap (5 tokens): What do you think [(*that)_____eats bugs]?
ii. Object gap (4 tokens): What do you think [(that) bugs eat____]?
Task: production. The experimenter read the children a short story and prompted them to ask a question that involved a gap in the embedded clause. For example:
Experimenter: In this game, the rat has to guess what Cookie Monster eats. We know that Cookie Monster eats cookies, right? But ask the rat what he thinks.
Expected response from child: What do you think (that) Cookie Monster eats?
Experimenter: In this game, the rat has to guess what is in the box. We know that there are some marbles, right? But ask the rat what he thinks.
Expected response from child: What do you think (*that) is in the box?

[5]The *that*-trace filter is just one of the several constraints on the gap occurrence that has been studied in the literature on syntactic acquisition development. The next experiment also will explore the other principles of this sort including *Wh* Island(argument & adjunct) effect.

(11) *Who did John believe [$_{NP}$ the man [$_{S}$ that met ____]]?
(cf. John believed the man that met Mary.)

(12) The Complex NP Constraint(CNPC)
A *Wh* word outside a complex NP cannot be associated with a gap inside it.

2.3 CNPC & Its Gap Interpretation

An experiment by Otsu (1981) gives this relevant data and story in Box 3.

Box 3 & The Study: Otsu 1981

Subjects: 12 3-year-olds, 12 4-year-olds, 12 5-year-olds, 12 6-year-olds, 12 7-year-olds.
Task: After practice, children were read a story such as the following and asked to answer the question at the end while looking at an accompanying picture (e.g., fig.7.2) (There were four such stories): Jim is catching a cat with a net. The cat is climbing a tree with a ladder. What is Jim catching a cat that is climbing a tree with _____?

If the child's answer is 'a ladder', the gap is treated as the relative clause in (13) as *with a ladder* states the climbing. Reversely, if the child responds by 'a net', the gap is linked with the higher S in (14), as *with a net* describes the catching, which is consistent with the a CNPC's prohibition. As children were not performed well on this task if they had not realized relative clauses, two pretests were given. In the first, children used toys to utter the meaning of three relative clause in (15). In the second, children tried four relative clause of equal length used in the gap interpretation test in (16). So, a related picture was provided.

(13) Jim is catching [$_{NP}$ a cat [$_{S}$ that is climbing a tree with a ladder]].

(14) Jim is catching [$_{NP}$ a cat [$_{S}$ that is climbing a tree]] with a net.

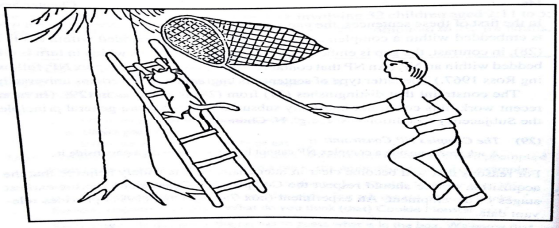


FIGURE 7.2 A Sample Picture (from Otsu 1981:65)

(15) The cow kissed the horse [that jumped over the elephant].

(16) Susan is chasing a boy who is hitting a rat with a stick.

The criterion for passing the gap interpretation test was 3 correct answers out of 4; for the diagnostic tests, the criterion for success was 2 out of 3 on the toy manipulation task and 3 out of 4 on the repetition task. Table 3 provides the figure of children passing and failing Otsu's tests. Given that the acquisition device respects the CNPC from the earliest development stage, it reassures that many subjects (21 in all) passed both diagnostic tests and the gap interpretation test. It is also not surprising to see that 23 children failed both the diagnostic tests and the gap interpretation test: children not familiar with relative clause cannot respond exactly such structures. The 9 children in the first row of the fail column show a puzzling case, because they failed the diagnostic tests but passed the gap interpretation test. Presumably, their success can be ascribed either to guessing or to use of a nonlinguistic strategy of some sort. More problematic, however, are 7 children in the second row of the pass column who passed the diagnostic test but failed the gap interpretation test. These children were over 10% of the test group and their performance cannot simply be ignored.

Table 3. Results of Otsu's Tests(number of children)(from Otsu 1981:82)

gap interpretation test	Diagnostic Tests		
	Pass	Fail	Total
Pass	21	9	30
Fail	7	23	30
Total	28	32	60

Crain and Fodor (1984) accessed this problem interestingly: they gave Otsu's gap interpretation test to adults and found that these subjects made about as many mistakes as did the children in the original study. They suggest that the errors caused by their adult subjects and by Otsu's children are ascribed to an independent processing strategy. There is a strong trend to link the italicized PP with the embedded clause rather than with the matrix clause in the example (17).

(17) Jim is drawing a monkey that is scratching its head *with a crayon*.

Hence, the preferred interpretation of (17) indicates that a monkey is using a crayon to scratch its head and not that Jim is using a crayon to draw a monkey.

(18) a. *favored interpretation* (*with a crayon* is in the embedded S):
Jim is drawing [$_{NP}$ a monkey [$_{s}$ that is scratching its head with a crayon]].
b. *disfavored interpretation* (*with a crayon* is in the higher S):
Jim is drawing [$_{NP}$ a monkey [$_{S}$ that is scratching its head]] with a crayon.

Two competing forces are in Otsu's gap interpretation. The strategy in (18) above makes children and adults to interpret the PP as part of the embedded clause. However, the grammar blocks this interpretation as the gap in an NP's embedded clause violates the CNPC. So, this processing strategy sometimes deviates the grammatical principle by the excessive interpretation. If Crain and Fodor are right, the younger own the Complex NP in their grammar--otherwise, there is nothing to react the processing preference and they would never give a correct response.

III. Procedure & Hypothesis

3.1 Subject & Mastering Procedure

3.1.1 Subjects

The subjects involved in this experiment about much more sophisticated *wh* question patterns are divided into the five different groups (G1 through G5), which are selected to notice English L2 acquisition process for Korean L1ers. All groups would hold 30 students (total 150) who are attending various English classes this semester as liberal arts in a university located in Jeonju. This experiment is done by not longitudinal but intensive method based on the pre-test training that the experimenter leads. It is dependant on a title of class, but not a work of level. In detail, G1 is the 2nd(6) & 3rd-year students(24) majoring in English Education. G2 of the 2nd-year students concentrates on TOEIC reading class dealing mainly with the primary grammar. Next, G3 for Intermediate English grammar consists of the 1st-year students and G4 as English basic conversation is covering the 2nd-year students of two classes. Lastly, G5 targeting the 1st-year students has been attending TOEIC listening class as the required course. This split work aims to weigh each group's learning status and analyze its accompanied results by tracing the common feature or difference of this certain syntactic construction.

3.1.2 Mastering Procedure

This experiment is composed of two-step tests including a pre-test(10 minutes) and diagnostic test(20 minutes), respectively. Here, the former is a kind of a training step to derive the better and intensive outcome in the next session and the latter is regarded as an ongoing step to help the participants mark the answers promptly by concentrating on the main test. In a pre-test right after short pilot sample relating to *wh* SQ and OQ movement is provided with the necessary lexical meanings(nouns & verbs) and a verb's grammatical tip like Lee (2017)[6], the syntactic or semantic

identity of three items such as *that* trace filter, complex NP effect and gap interpretation is introduced step-by-step from the experimenter. In a diagnostic test, the main test with all 10 sentences is conducted for about 10 minutes. At this time, English L2ers are required to check the *wh* word's original position it stays on before it is settled down to the sentence-initial position. That is, by searching for *wh* trace in matrix or embedded clause, it is confirmed how exactly Korean subjects would understand the distinctive concept of relative clause and complement clause. In detail, whereas item 1 and item 2 would readily consider the purely syntactic intuition, item 3 assisted with the illustrated picture the pragmatic function beyond syntax. This gap interpretation divided into two types (Type A & Type B) is intended to catch from L2ers which verb an underlined and bold specific PP in a given sentence works with.

Table 4. The target sentences of English *wh*-questions

a. Pre-test

Task: After conducting pre-test shown below, this test is to check *wh*-word's extraction status before it is moved over to a sentence-initial position. Based on your syntactic or subsequent intuition, indicate its original position (① & ②) among the given options(item 1 through item 3). Pilot Sample: (1a) Who ***t*** is hitting you? & (1b) Who are you hitting ***t***? Pilot Sample: (2a) What ***t*** is touching you? & (2b) What are you touching ***t***?	
Item 1	a. *Who [$_s$ did Harry say __***t***__ [$_{CP}$ that ____mistrusted the stranger]]? (Henry said that Tom mistrusted the stranger) b. Who [$_s$ did Harry say _____ [$_{CP}$ __***t***__ mistrusted the stranger]]? (Henry said Tom mistrusted the stranger) c. Who [$_s$ did Harry say ____ [$_{CP}$ that the stranger mistrusted __***t***__]]? (Henry said that the stranger mistrusted Tom) d. Who [$_s$ did Harry say _____ [$_{CP}$ the stranger mistrusted __***t***__]]? (Henry said the stranger mistrusted Tom)

[6] From Lee (2017), it is argued that SQ and OQ's movement principle in a simple sentence were properly explained with each verb's syntactic tip on whether it is a transitivity or intransitivity verb. Also, at this pilot chance, the same examples used on extraction trace were offered again.

Item 2	a. Who [$_s$_____ did he [$_{vp}$ see ___*t*__ last week]]? (cf. He saw Mary) b. Who did Poirot [$_{vp}$ claim ____ [$_s$ that he saw __*t*__ last week]]? (cf. Poirot claimed that he saw Mary last week) c.*Who did Poirot make [$_{NP}$ ___*t*_ the claim [$_s$that he saw _____ last week]]? (cf. Poirot made claim that he saw Mary last week)
Item 3	a. The cow kissed [$_{NP}$ the horse [$_s$ that jumped over the elephant]]. (jumped --- over the elephant) b. Susan is chasing [$_{NP}$ a boy [$_s$ who is hitting a rat]] with a stick. (chasing --- with a stick)

b. Diagnostic test

Task: After conducting pre-test shown below, this test is to check *wh*-word's extraction status before it is moved over to a sentence-initial position. Based on your syntactic or subsequent intuition, indicate its original position (① & ②) among the given options (item 1 & item 2). In case of item 3(gap interpretation), try to draw the arrow to the element (① & ②) that the specific PP modifies from your perspective.

Item 1	1) Who did the lion know __ ①____ [that __②____ swam in the pond]? 2) Who did the lion believe _ ①____ [__②____ swam in the pond]? 3) Who did the dog notice ___①___ [that the rooster kicked __②____]? 4) Who did the horse believe _①____ [the lion hugged ___②___]?
Item 2	5) Who did John [believe ___①___[that Sue met__②___]]? 6) Who did John [believe ___①__ [the man [that met _②____]]?

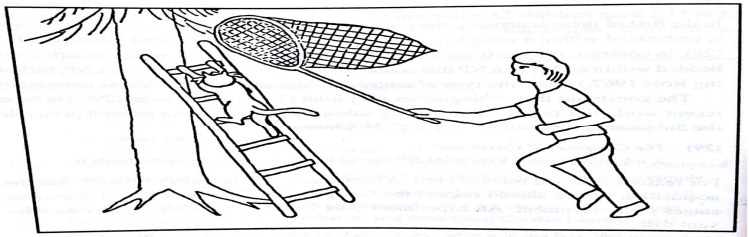


FIGURE 7.2 A Sample Picture (from Otsu 1981:65)

Item 3	Type A Q: What is Jim catching a cat that is climbing a tree with _____? 7) Jim is catching(①) a cat that is climbing(②) a tree **with a ladder**. 8) Jim is catching(①) a cat that is climbing(②) a tree **with a net**.
	Type B Q: What is Jim drawing a monkey that is scratching its head with _____? 9) Jim is drawing(①) a monkey that is scratching(②) its head **with its hand**. 10) Jim is drawing(①) a monkey that is scratching(②) its head **with a crayon**

3.2 Syntactic Expectations

Three predictions this paper suggests are as follows:

(19) Hypothesis 1: English L2ers of Korean L1ers will have a trouble distinguishing relative clause from complement clause exactly.
Hypothesis 2: It is most likely that *that*-trace filter and CNPC have been unconsciously accessible to L2ers so far.
Hypothesis 3: As for L2ers gap interpretation moving within and over an embedded clause seems to bring about the violation of syntactic constraint like English L1ers have.

IV. Result & Analysis

4.1 Total Figure

Three sections (Item 1, Item 2, Item 3), as seen in Table 5 below, are individually evaluated. They are divided into *that*-trace filter, CNPC and gap interpretation, respectively. Whereas Item 1 and Item 2 focus on the only correction rate, Item 3 both the correction and incorrectness rate simultaneously. That is why

the former would resort exclusively to the grammaticality and the latter the syntax and semantics that induce big collision course together with the unexpected outcome, which can be the tip of interesting argument for L2ers' development stage. Also, the last blank, M** indicates the mean (average) of total figure with regard to each *wh*-question occurring G1 through G5.

Table 5.(No=number, G*=group, M**=mean)

Item	Item 1				Item 2		Item 3							
sort	*that* trace filter				CNPC		Gap Interpretation							
No / G*	(1)	(2)	(3)	(4)	(5)	(6)	Type A				Type B			
							(7)		(8)		(9)		(10)	
							①	②	①	②	①	②	①	②
G1	21	22	23	20	22	16	5	25	25	5	4	26	26	4
G2	23	22	25	22	25	16	3	27	27	3	11	19	19	11
G3	24	21	20	19	18	18	9	21	21	9	9	21	17	13
G4	26	25	25	28	17	15	7	23	17	13	12	18	14	16
G5	27	26	27	25	19	14	2	28	28	2	5	25	24	6
M**	81%	77%	80%	76%	67%	53%	17%	83%	79%	21%	27%	73%	67%	33%

4.2 hypothesis 1: English L2ers of Korean L1ers will have a trouble distinguishing relative clause from complement clause exactly.

Hypothesis 1 attempts to ask Korean L1ers how to recognize and practice two kinds of English gappings in a complex sentence. This is a very tough question given that English L2ers have to bear the exact knowledge through the mastering procedures that have been built up so far.

As for the first hypothesis, the order of acquisition status is as follows: Item 1 > Item 2, Item 3. First, in case of Item 1 (81+77+80+76/4=79%), 79% of L2ers have a tendency to comprehend the grammatical concept of the relative clause and complement clause involved with gapping. Next, separated from two sections (5,6) in Item 2, CNPC (6, 53%) does not illustrate the significant learning process compared to the simple object gapping of complement clause (5, 67%).[7] Lastly, Item

3 (83+21+73+33/4=53%) showing the same figure with Item 2 seems to cause the confusion by inserting a PP at the sentence-final position, which comes into conflict with syntactic rule and semantic device.

Item 2 and Item 3 prove to go through the dramatic downturn rather than Item 1 via this experiment. This directly follows that innate grammatical stocking has a high priority to flexible functional areas. It becomes so obvious that the semantic ambiguity occurring within a sentence can interrupt the fixed surface rule at all times. Therefore, hypothesis 1 is acceptable despite the slight discrepancies of each item considering that two items (Item 2 & Item 3) dropped substantially compared to one item (Item 1).

4.3 hypothesis 2: It is most likely that *that*-trace filter and CNPC have been unconsciously accessible to L2ers so far.

Hypothesis 2 points out that L2ers have also acquired the difference between relative clause and complement clause to some degree like L1ers. Especially, *that*-trace filter or CNPC's principle is thought to be considerably picky to understand. First of all, seemingly, four sentences (1) through (4) in Item 1 are nearly similar. However, (1) asks identity of *that*-trace filter and (2-4) the simple gapping (subject & object) of complement clause. Unexpectedly, *That*-trace filter (81%, relative clause vs 19%, complement clause) proves to be kept by L2 learners in Table (6, (1)). On the other hand, Table (6, (2), (3), (4)) shows that *wh*-word *who* in the sentence-final position is associated with the gap (subject or object) of complement clause. Next, Item 2(Table 6, (5), (6)) compare the complement clause

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[7] Likewise, Lee (2017) notes that regarding initial *Wh*-word's extraction trace an embedding depth within a sentence is subject to acquisition-sensitive: in (ia,b,c) below, (ic) is the most difficult or tough for L2ers to comprehend given that (ic) with both NP and PP is sententially deeper than (ia,b).

(i) a. What [$_{S}$ ① will Sue [$_{VP}$ say ②]]?
b. What [$_{S}$ ① will Sue [$_{VP}$ talk ② [$_{PP}$ about ③]]]?
c. What [$_{S}$ ① will Sue [$_{VP}$ read ② [$_{NP}$ book ③ [$_{PP}$ about ④]]]]?

(object gap) with relative clause (CNPC). Although CNPC (6, 53%)'s acquaintance is relatively low with object gapping (5, 67%)'s, the former is just over half percent; 53% of L2ers would consider *who*'s gap the first trace (①) but not the second trace (②).

Namely, it is confirmed that the observation of *that*-trace filter (81%) from L2ers is much preferable to that of CNPC (53%). Therefore, hypothesis 2 is regarded as partially persuading by long interval between them.

1) Who did the lion know __ ①____ [that __②____ swam in the pond]?
6) Who did John [believe ___①__ [the man [that met _②____]]?

Table 6.

Item	Item 1								Item 2			
sort	*that* trace filter								CNPC			
No / G*	(1)		(2)		(3)		(4)		(5)		(6)	
clause	Re	Co	Re	Co	Re	Co	Re	Co	Re	Co	Re	Co
G1	21	9	8	22	7	23	10	20	8	22	16	14
G2	23	7	8	22	5	25	8	22	5	25	16	14
G3	24	6	9	21	10	20	11	19	12	18	18	12
G4	26	4	5	25	5	25	2	28	13	17	15	15
G5	27	3	4	26	3	27	5	25	11	19	14	16
M**	81%	19%	23%	77%	20%	80%	24%	76%	33%	67%	53%	47%

4.4 hypothesis 3: As for L2ers gap interpretation moving within and over an embedded clause seems to bring about the violation of syntactic constraint like English L1ers have.

As shown in Table 7 below, Item 3 would separate Type A and Type B, which show what verb(element) a specific PP in bold at a sentence-final position modifies. It is argued that if the PP states a verb in an embedded clause, it is understood as a part of a relative clause and if the PP states a verb in a matrix clause, it readily

violates CNPC in subsection 2.3 (Otsu, 1981). For this reason, the only choice ② from Q7 to Q10 is acceptable and choice ① unacceptable.

Minutely from Table 7, Q7 (②, 83%) and Q9 (②,73%) are much more than Q7 (①, 17%) and Q9 (①, 27%), respectively: *with a ladder* and *with its hand* mention an embedded verb in a relative clause, *climbing and scratching*. On the another hand, Q8 (①, 79%) and Q10 (①, 67%)'s rates are higher than Q8 (②, 21%) and Q10 (②, 33%)': *with a net* and *with a crayon* each state a matrix verb, *catching* and *drawing*. It directly verifies that Q8 (①) and Q10 (①) are quite preferable to L2ers in spite of the CNPC's violation.

In what brings about this syntactic error, it is most likely that semantic interpretation may naturally ignore the mutually fixed principle that the L2 learners in field should comply with. That is to say, a PP, *with a net* in Q8 in Table 7 at the sentence-final position would modify a verb *catching* rather than *climbing*. In the same vein, a certain PP, *with a crayon* in (Q10) matches with a main verb, *drawing* more than a complement verb, *scratching*. Conversely, *with a ladder* and *with its hand* in Q7 and Q9 are somehow farther than *catching* and *drawing*. Interestingly, in light of functional ambiguity, Type A (83%, 79%) is semantically closer than Type B (73%, 67%) given that the gap interpretation of the former is much more cohesive than that of the latter. Namely, on the basis of this pragmatic explanation, it is truthful that the close linking between a verb and a PP works properly beyond the syntactic condition, CNPC (Q8① & Q10①) as much as L1ers have had.[8] So, hypothesis 3 is accepted by English L2ers.

[8] An (2018) says that Korean speakers of English can utilize target grammatical knowledge into interpretive interface, which in turn conveys the implication of UG involvement in L2 development. So, he suggests that L2 speakers have an access to the syntax-semantics interface of target language while L2 parsing difficulties intervene their performance.

Table 7.

Item	Item 3							
sort	Gap Interpretation							
No / G*	Type A				Type B			
	(7)		(8)		(9)		(10)	
	①	②	①	②	①	②	①	②
G1	5	25	25	5	4	26	26	4
G2	3	27	27	3	11	19	19	11
G3	9	21	21	9	9	21	17	13
G4	7	23	17	13	12	18	14	16
G5	2	28	28	2	5	25	24	6
M**	17%	83%	79%	21%	27%	73%	67%	33%

V. Conclusion

This paper examined English L2 acquisition status for Korean L1ers contingent on much more developed *wh*-questions patterns such as *that*-trace filter, CNPC and interpretative ambiguity on a sentence-final PP. It is compatible to Lee (2017)'s argument that the relative distance between an initial *wh*-word and gap would be a vital factor in marking the (un)acceptability in a simple clause or a complex clause. By short-term tests here are three confirmed predictions: first, English L2ers are inclined to have difficulty contrasting a relative clause with a complement clause as the confusing semantic elements appear in the surface. second, *that*-trace filter and CNPC have been unexpectedly realized to L2ers with over medium percentage though they are syntactically tough constructions. Third, a sentence-final PP posited in a complex structure will make Korean L1ers degrade the syntactic judgement by drawing the twofold meaning. All in all, these ideas prove to be rather realistic and generalized from the participants that go through the pre-test and diagnostic test.

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